

PATENT APPLICATION
2771-272 CON

The claims 2-4, 12-14, 24-27, 53 and 57-62 pending in the application are set out in the following Section I (Pending Claims) hereof. No amendments have been made.

Remarks addressing the issues raised in the June 18, 2003 Office Action are set out in Section II (Remarks) hereof.

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The claims 2-4, 12-14, 24-27, 53 and 57-62 pending in the application are set out below. No amendments are being made.

1. (previously canceled)
2. (previously amended) The method according to claim 57, wherein the dry etching composition consists essentially of XeF_2 .
3. (previously amended) The method according to claim 57, wherein the dry etching composition consists essentially of at least one dry etching agent selected from the group consisting of SiF_4 , and Si_2F_6 .
4. (previously amended) The method according to claim 57, wherein the dry etching composition consists essentially of at least one dry etching agent selected from the group consisting of SiF_2 and SiF_3 radicals.
- 5-11 (previously canceled)
12. (previously amended) The method according to claim 57, wherein the dry etching composition consists essentially of SiF_2 and SiF_3 radicals and the dry etching composition is generated by reaction of XeF_2 with silicon.
13. (previously amended) The method according to claim 57, wherein the dry etching composition consists essentially of SiF_2 and SiF_3 radicals and the dry etching composition is generated by passing SiF_4 through an energetic dissociation source.
14. (previously amended) The method according to claim 13, wherein the energetic dissociation source is selected from the group consisting of a plasma source, an ion source, an ultra violet source and a laser source.
- 15-23 (previously canceled)

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24. (previously amended) A method for removing from a microelectronic device structure a noble metal residue, the method comprising contacting the microelectronic device structure with a dry etching agent consisting essentially of (i) a gas-phase reactive halide composition and (ii) optionally, an agent for enhancing volatility of metal fluoride species formed by said contacting of the microelectronic device structure with the gas-phase reactive halide composition (i), to remove the residue, wherein the noble metal residue comprises iridium, and the gas-phase reactive halide composition comprises XeF_2 and at least one halide species selected from the group consisting of SF_6 , SiF_4 , Si_2F_6 , SiF_2 radicals and SiF_3 radicals, and wherein the microelectronic device structure is further contacted with a cleaning enhancement agent.
25. (previously amended) The method according to claim 24, wherein the cleaning enhancement agent is selected from the group consisting of Lewis-base and electron back-bonding species.
26. (previously amended) The method according to claim 24, wherein the cleaning enhancement agent is selected from the group consisting of carbon monoxide, trifluorophosphine, and trialkylphosphines.
27. (previously amended) The method according to claim 24 wherein the cleaning enhancement agent comprises an agent for enhancing volatility of iridium fluoride species formed by said contacting of the microelectronic device structure with the gas-phase reactive halide composition.
- 28-52 (previously cancelled)
53. (previously added) A method for removing a noble metal residue comprising iridium, from a microelectronic device structure disposed in a chamber, the method comprising evacuating the chamber, filling the chamber with a cleaning gas comprising XeF_2 and one or more radicals selected from the group consisting of SiF_2 and SiF_3 , and retaining the cleaning gas in the chamber to react with the residue, to effect the removal of the noble metal residue from the microelectronic device structure.
- 54-56 (previously cancelled)

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57. (previously amended) A method for removing from a microelectronic device structure a noble metal residue including at least one metal selected from the group consisting of platinum, palladium, iridium and rhodium, the method comprising contacting the microelectronic device structure with a dry etching composition consisting essentially of (i) at least one dry etching agent selected from the group consisting of XeF_2 , SiF_4 , Si_2F_6 , SiF_2 radicals, and SiF_3 radicals, and (ii) optionally, carbon monoxide.
58. (previously added) A method for removing from a microelectronic device structure, a noble metal residue comprising iridium said method comprising, contacting the microelectronic device structure with a gas-phase reactive halide composition comprising XeF_2 and at least one cleaning enhancement agent selected from the group consisting of carbon monoxide, trifluorophosphine, and trialkylphosphines, to form at least one iridium halide species.
59. (previously added) The method according to claim 57, wherein said noble metal residue includes at least one metal selected from the group consisting of palladium, iridium and rhodium.
60. (previously amended) The method according to claim 57, wherein said dry etching composition consists essentially of (i) said at least one dry etching agent and (ii) carbon monoxide.
61. (previously added) A method of etching iridium, comprising contacting said iridium with XeF_2 .
62. (previously added) A method for removing a noble metal residue from a microelectronic device structure, wherein said noble metal residue is selected from the group consisting of palladium, iridium and rhodium, said method comprising contacting the microelectronic device structure with a composition consisting essentially of: (1) SF_6 and optionally (2) carbon monoxide.